

# Mitigation and Analysis of Arc Faults in Automotive DC Networks

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***Abstract*** – The introduction of system voltages higher than 24 VDC in vehicles, forces considerable component and system changes regarding reliability and electrical safety. In the instance of an arc fault, e.g. when a wire is cut, pinched, chafed or breaks under load, or an arc is drawn between disconnecting terminals, the resulting fault current may be significantly lower than the trip current of common protection devices such as fuses or circuit breakers. In these cases, the fault is cleared late (depending on the time/current characteristics) or, in some cases, not at all. The authors discuss different types of arc faults and introduce approaches to deal with them.

***Index terms*** – Arc Faults, Arc Fault Detection, 42 V PowerNet, Connectors, Switches, Relays, DC, Hot Plugging, Fuses